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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,578	02/27/2004	Andrew P. Nguyen	6601.P046	9132

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EXAMINER

TADESSE, YEWEBDAR T

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 09/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/788,578

Applicant(s)

NGUYEN, ANDREW P.

Examiner

Yewebdar T. Tadesse

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-20 and 22-42 is/are pending in the application.
- 4a) Of the above claim(s) 33-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-10, 18-20, 22-25 and 28-30 is/are rejected.
- 7) ☒ Claim(s) 11-17, 26, 27, 31 and 32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 22 is objected to because of the following informalities: claim 22 depends from cancelled claim 21. For the purpose of examination claim 22 depends from claim 20 is assumed. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 28-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Ushijima et al (US 5,002,008).

As to claim 28, Ushijima et al discloses (see Fig 6) an apparatus comprising a casing (vessel 100) having a chamber therein and an opening (97a) connected to the chamber and sized to fit at least one nozzle of a dispense head; a reservoir (107) within the chamber to hold a fluid; and a drain (106) within the chamber positioned relative to the opening such that when the at least one nozzle (30a) of the dispense head is inserted into the opening a liquid dispensed from the at least one nozzle enters the drain without mixing with the fluid in the reservoir, while the at least one nozzle is exposed to air in the chamber saturated with vapor of the fluid held in the reservoir (106), wherein the chamber includes a recess for the dispense head to engage the

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chamber such that a fit of the dispense head into the recess substantially seals the chamber such that only a minimal amount of saturated air escape therethrough.

With respect to claims 29-30, in Ushijima et al the casing (vessel 100) comprises a base, side wall and a top piece, wherein the drain (106) and the reservoir (107) are attached to the base of the casing, the opening is in the top piece of the casing and the sidewall interconnects the base and the top piece (see Fig 6).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-5, 7-10, 18-20 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto et al (US 5,938,847) in view of Ushijima et al (US 5,002,008).

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As to claims 1, 3-4, 18-20 and 22-23, Akimoto et al discloses (see Figs 2-3) a semiconductor substrate processing apparatus comprising a frame (casing 13a); a substrate support (spin chuck 22) mounted to the frame to support a semiconductor substrate; a dispense head (31) having at least one outlet opening (nozzle N1-N4); connected to the frame for movement relative to the semiconductor substrate (W); a solvent bath (receptacle 51) attached to the frame (see Fig 3), the solvent bath (51) having a drain (53), the dispense head (32) having first and second selected positions, in the first position a fluid or resist liquid dispensed through nozzle and in the second selected position the nozzle is kept in the receptacle, the solvent bath has a recess for the dispense head to engage the solvent bath (receptacle 51) and the fluid dispense from the outlet opening enters the drain (53). Akimoto et al lacks teaching a solvent bath having a reservoir holding a first fluid and the shape of the solvent bath such that when the dispense head is in a selected position, a second fluid dispensed from the at least one outlet opening enters the drain without mixing with the first fluid in the reservoir while the at least one outlet opening is exposed to air saturated with vapor of the first fluid in the reservoir, wherein the solvent bath includes a recess for the dispense head to engage the solvent bath such that a fit of the dispense head into the recess substantially seals the solvent bath such that only a minimal amount of saturated air escape therethrough, and wherein the second fluid exits the solvent bath through the drain without mixing with the first fluid. Ushijima et al discloses (see Fig 6) a solvent bath (vessel 100) having a reservoir (107), holding a first fluid; a drain (106) and the solvent bath is shaped when the dispense head is in a selected position in the solvent

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bath (100), a second fluid dispensed from the at least one outlet opening enters the drain (106) and at least one outlet opening is exposed to the first fluid, wherein the solvent bath (100) includes a recess (97a) for the dispense head to engage the solvent bath such that a fit of the dispense head (nozzle 30a) into the recess substantially seals the solvent bath (see Fig 6) such that only a minimal amount of saturated air escape therethrough, and wherein the second fluid dispensed from the at least one outlet opening enters the drain (106) without mixing with the first fluid while the at least one outlet opening is exposed to air saturated with vapor of the first fluid in the reservoir (see Fig 6). It would have also been obvious to one of ordinary skill in the art at the time the invention was made to use a solvent bath including, a reservoir holding a first fluid, a recess for the dispense head to engage the solvent bath such that a fit of the dispense head into the recess substantially seals the solvent bath and wherein a second fluid dispensed from the at least one outlet opening enters the drain without mixing with the first fluid in the reservoir while the at least one outlet opening is exposed to air saturated with vapor of the first fluid in the reservoir in Akimoto et al to prevent the resist solution from being dried on the surface of the nozzle as taught by Ushijima et al (see column 5, lines 20-33).

As to claim 2, in Akimoto et al (see Fig 3) the dispense head (nozzle N1) is movable between a first position and a second position relative to the semiconductor substrate.

With respect to claims 5, 7-10 and 24-25, Akimoto et al lacks teaching the structure of the solvent bath. Ushijima et al discloses (see Figs 5- 6) a solvent bath

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having a casing having a chamber sized to fit at least one nozzle comprising a base, side wall, a top piece, wherein the drain (106) and the reservoir (107) are attached to the base of the casing, the opening is in the top piece of the casing and the side wall interconnects the base and the top piece and a fit between the dispense head and the opening substantially seal the chamber. It would have been obvious to one of ordinary skill in the art at the time the invention was to construct the solvent bath having a casing and others as claimed in Akimoto et al as modified to maintain the nozzle within a volatile atmosphere preventing the resist solution from being dried (see column 5, lines 20-33).

7. Claims 11-17, 26-27 and 31-32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: Ushijima et al discloses a drain (106) for discharging the liquid collected in the lower chamber (104). There is no need to further include a funnel structure connected to the drain in Ushijima et al solvent bath (vessel 100). Akimoto et al's bath (receptacle 51, see Fig 2) has a funnel structure. However, the other structures of the solvent bath having a casing, base, sidewalls and reservoir are not shown in the Akimoto et al as described above in the rejections. Prior art of record does not disclose or suggest, a semiconductor substrate processing apparatus having a solvent bath, or an apparatus with a casing having a chamber therein to fit at least one nozzle comprising, among

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others, wherein the base of the casing or the solvent bath comprising a funnel structure connected to the drain.

Response to Arguments

9. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yewebdar T. Tadesse whose telephone number is (571)

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272-1238. The examiner can normally be reached on Monday-Friday 8:00 AM-4: 30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



YTT